Course Outline

Evolution, Natural Selection, Species Interactions --- Chapter 1, Herrera & Pellmyr (for review, also see Chapters 1 & 2 in H&W)

Reading the scientific literature; critical evaluation, hypothesis testing, basic statistics

Herbivory ---- Chapter 3 & 4, Herrera & Pellmyr (for review, also see Chapters 3, 4 & 5 in H&W).

Plant Defense and Animal Offense
or, “Why is the earth green and what makes a successful herbivore”?

Plant Defense
Types of Defensive Compounds
Escape in Space and/or Time
Induced vs. Constitutive Defense
Terrestrial and Aquatic Systems
Effect of mycorrhizal fungi
Compensation/Overcompensation
Cost of resistance

Ecology of Herbivory
Theories of Plant Defense
  Plant Apparency
  Resource Availability

Herbivore Offense
Mechanisms to overcome defense
Coevolution
Diet breadth of herbivores
Comparative Phylogeny of Plants and Herbivores
Diffuse Coevolution

Importance of Plant Defense vs. Natural Enemies
Tri-trophic interactions
Parasites
Parasitoids
Predators
Mechanisms and Ecology of Mutualisms ---- Chapter 6 Herrera and Pellmyr
(for review see Chs. 6,7,8 in H&W)

Pollination
Syndromes and lack thereof
Evolution of plant traits, mating systems
The effects of multiple species on the evolution of floral traits
Cheating “mutualists”
nectar robbers
pollinating seed predators - Yuccas and Yucca moths
post-dispersal “predators” - or mutualistic dispersers?

Seed Predation ---- Chapter 5&7 Herrera and Pellmyr

Pre-dispersal
Post-dispersal

Ant/Plant Interactions ---- Chapter 8 Herrera and Pellmyr

Applied plant-animal interactions ---- Readings from the primary literature will be assigned.

Use of plant compounds for human benefit
Genetic engineering for resistance to pests
Biological control and integrated pest management
Global Climate change - effects on interactions